

CLAIMS

1. A portable telephone of a diversity type that can be used in both of a continuous transmit/receive system performing continuous

5 transmission/reception of a signal and a time-division transmit/receive system performing time-divisional transmission /reception of a signal, comprising:

first and second antennas (1, 2) provided spaced apart from each other;

10 a first transmit/receive circuit (6, 11, 12) for transmitting/receiving a signal to/from a base station for said continuous transmit/receive system;

a second transmit/receive circuit (SW3, 13, 14) for transmitting/receiving a signal to/from a base station for said time-division transmit/receive system;

15 a judging circuit (15) judging one of said continuous transmit/receive system and said time-division transmit/receive system as a main system and the other as a monitor system on the basis of receive signals of said first and second transmit/receive circuits (SW3, 6, 11 to 14); and

20 a coupler (4, 5, SW1, SW2, 21, 23, 24) coupling said first or second transmit/receive circuit (6, 11, 12 or SW3, 13, 14) corresponding to a system judged as a main system by said judging circuit (15) with said first and second antennas (1, 2) in a main system operation in which a signal is transmitted/received to/from a base station for the main system, while coupling said first or second transmit/receive circuit (6, 11, 12 or SW3, 13, 14) corresponding to a system judged as a monitor system by said judging circuit (15) with said first and second antennas (1, 2) in monitoring in which a signal is received from a base station for a monitor system.

25 30 2. The portable telephone according to claim 1, wherein said coupler (4, 5, SW1, SW2) comprises:

a first filter (4) provided between said first antenna (1) and said first transmit/receive circuit (6, 11, 12), passing a signal of said continuous transmit/receive system therethrough and suppressing a signal of said

time-division transmit/receive system;

a second filter (5) provided between said first antenna (1) and said second transmit/receive circuit (SW3, 13, 14), passing a signal of said time-division transmit/receive system therethrough and suppressing a signal of said continuous transmit/receive system; and

a switching circuit (SW1, SW2) coupling said second antenna (2) and said first transmit/receive circuit (6, 11, 16) with each other in a main system operation in case where said continuous transmit/receive system is a main system and in monitoring in a case where said time-division transmit/receive system is a main system, while coupling not only said first antenna (1) and said second transmit/receive circuit (SW3, 13, 14) with each other through said second filter (5) but also said second antenna (2) and said second transmit/receive circuit (SW3, 13, 14) with each other in a main system operation in case where said time-division transmit/receive system is a main system and in monitoring in a case where said continuous transmit/receive system is a main system.

3. The portable telephone according to claim 1, wherein said coupler (4, 5, 21, SW1) comprises:

a first filter (4) provided between said first antenna (1) and said first transmit/receive circuit (6, 11, 12), passing a signal of said continuous transmit/receive system therethrough and suppressing a signal of said time-division transmit/receive system;

a second filter (5) provided between said first antenna (1) and said second transmit/receive circuit (SW3, 13, 14), passing a signal of said time-division transmit/receive system therethrough and suppressing a signal of said continuous transmit/receive system;

a circulator having first to third input/output ports (3a to 5a), giving a receive signal to said second transmit/receive circuit (SW3, 13, 14) through said second input/output port (21b) thereof, said receive signal being given to said first input/output port (21a) thereof through said first antenna (1) and said second filter (5), while giving a transmit signal to said first antenna (1) through said first input/output port (21a) thereof and said

second filter (5), the transmit signal being given to said third input/output port (21c) thereof from said second transmit/receive circuit (SW3, 13, 14); and

a switching circuit (SW1) coupling said second antenna (2) and said first transmit/receive circuit (6, 11, 12) with each other in a main system operation in a case where said continuous transmit/receive system is a main system and in monitoring in a case where said time-division transmit/receive system is a main system, while coupling said second antenna (2) and said second transmit/receive circuit (SW3, 13, 14) with each other in a main system operation in a case where said time-division transmit/receive system is a main system and in monitoring in a case where said continuous transmit/receive system is a main system.

4. The portable telephone according to claim 1, wherein said coupler (4, 5, 21, 23, 24) comprises:

first and second filters (4, 24), provided between each of said first and second antennas (1, 2) respectively, and said first transmit/receive circuit (6, 11, 12), passing a signal of said continuous transmit/receive system therethrough and suppressing a signal of said time-division transmit/receive system;

third and fourth filters (5, 23), provided between each of said first and second antennas (1, 2) respectively, and said second transmit/receive circuit (SW3, 13, 14), passing a signal of said time-division transmit/receive system therethrough and suppressing a signal of said continuous transmit/receive system; and

a circulator having first to third input/output ports (21a to 21c), giving a receive signal to said second transmit/receive circuit (SW3, 13, 14) through said second input/output port (21b), said receive signal being given to said first input/output port (21a) through said first antenna (1) and said third filter (5), while giving a transmit signal to said first antenna (1) through said first input/output port (21a) and said third filter (5), said transmit signal being given to said third input/output port (21c) from said second transmit/receive circuit (SW3, 13, 14).

5. The portable telephone according to claim 1, wherein said
coupler (4, 5, 23, 24, SW2) comprises:

5 first and second filters (4, 24), respectively, provided between each of
said first and second antennas (1, 2), and said first transmit/receive circuit
(6, 11, 12), passing a signal of said continuous transmit/receive system
therethrough and suppressing a signal of said time-division
transmit/receive system;

10 third and fourth filters (5, 23), respectively, provided between each of
said first and second antennas (1, 2), and said second transmit/receive
circuit (SW3, 13, 14), passing a signal of said time-division transmit/receive
system therethrough and suppressing a signal of said continuous
transmit/receive system; and

15 a switching circuit (SW2) giving a transmit signal outputted from
said second transmit/receive circuit (SW3, 13, 14) to said first antenna (1)
through said third filter (5) in transmission of said second transmit/receive
circuit (SW3, 13, 14), while giving a receive signal of said first antenna (1)
to said second transmit/receive circuit (SW3, 13, 14) through said third
filter (5) in reception of said second transmit/receive circuit (SW3, 13, 14).

20 6. The portable telephone according to claim 1, wherein said first
transmit/receive circuit (6, 11, 12) generates receive speech data on the
basis of receive signals from said first and second antennas (1, 2) and

25 said second transmit/receive circuit (SW3, 13, 14) selects a signal of a
higher signal level of receive signals from said first and second antennas (1,
2) and generates receive speech data on the basis of the selected receive
signal.